

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 30501

CSAH NO. 7

OVER THE

RUM RIVER

DISTRICT 3 - ISANTI COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION
BY
COLLINS ENGINEERS, INC.
JOB NO. 5221

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 30501, Piers 1 and 2, were found to be generally in good condition with no structurally significant defects observed. Light scaling with up to 1/4 inch maximum penetration was observed around both piers. A minor scour depression was observed at the upstream nose of Pier 1. There was also minor scour around all of Pier 2. The channel bottom around the substructure units appeared stable with only the minor scour at the piers.

INSPECTION FINDINGS:

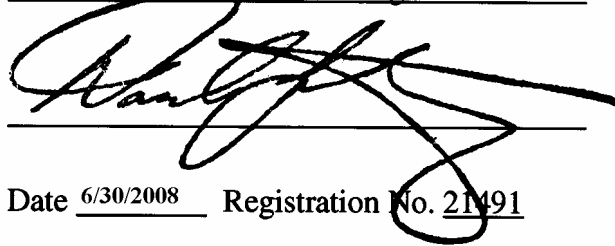
- (A) A band of light scaling was observed around the entire perimeter of Piers 1 and 2 from the channel bottom to 2 feet above the waterline with up to 1/4 inch of penetration.
- (B) A 2-foot-deep scour depression was observed from the upstream quarter point on the north face of Pier 1 around the upstream nose to the upstream quarter point on the south face.
- (C) The entire pier shaft at Pier 2 was located in a 2-foot-deep scour depression which extended approximately 3 feet off the pier faces and noses.

RECOMMENDATIONS:

- (A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

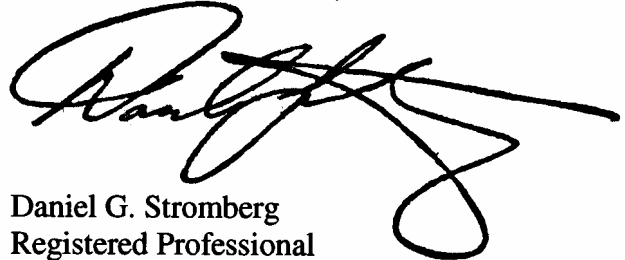
Daniel G. Stromberg

A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over a horizontal line.

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over a horizontal line.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 30501

Feature Crossed: Rum River

Feature Carried: CSAH No. 7

Location: District 3 - Isanti County

Bridge Description: The bridge superstructure consists of three spans of multiple steel girders supported by two concrete hammerhead type piers and two concrete abutments. The piers are numbered 1 and 2 starting from the south end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Bradley A. Syler, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 16, 2007

Weather Conditions: Rainy, 50° F

Underwater Visibility: 1.0 foot

Waterway Velocity: 1.5 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: Each pier consists of an oblong rectangular shaft with rounded noses and rests upon a rectangular concrete footing supported on timber piles.

Maximum Water Depth at Substructure Inspected: Approximately 4.9 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the cap at the upstream end of Pier 2.

Water Surface: The waterline was approximately 13.8 feet below reference.
Assumed Waterline Elevation = 86.2

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 6

Item 92B: Underwater Inspection: Code B/10/07

Item 113: Scour Critical Bridges: Code O/02

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

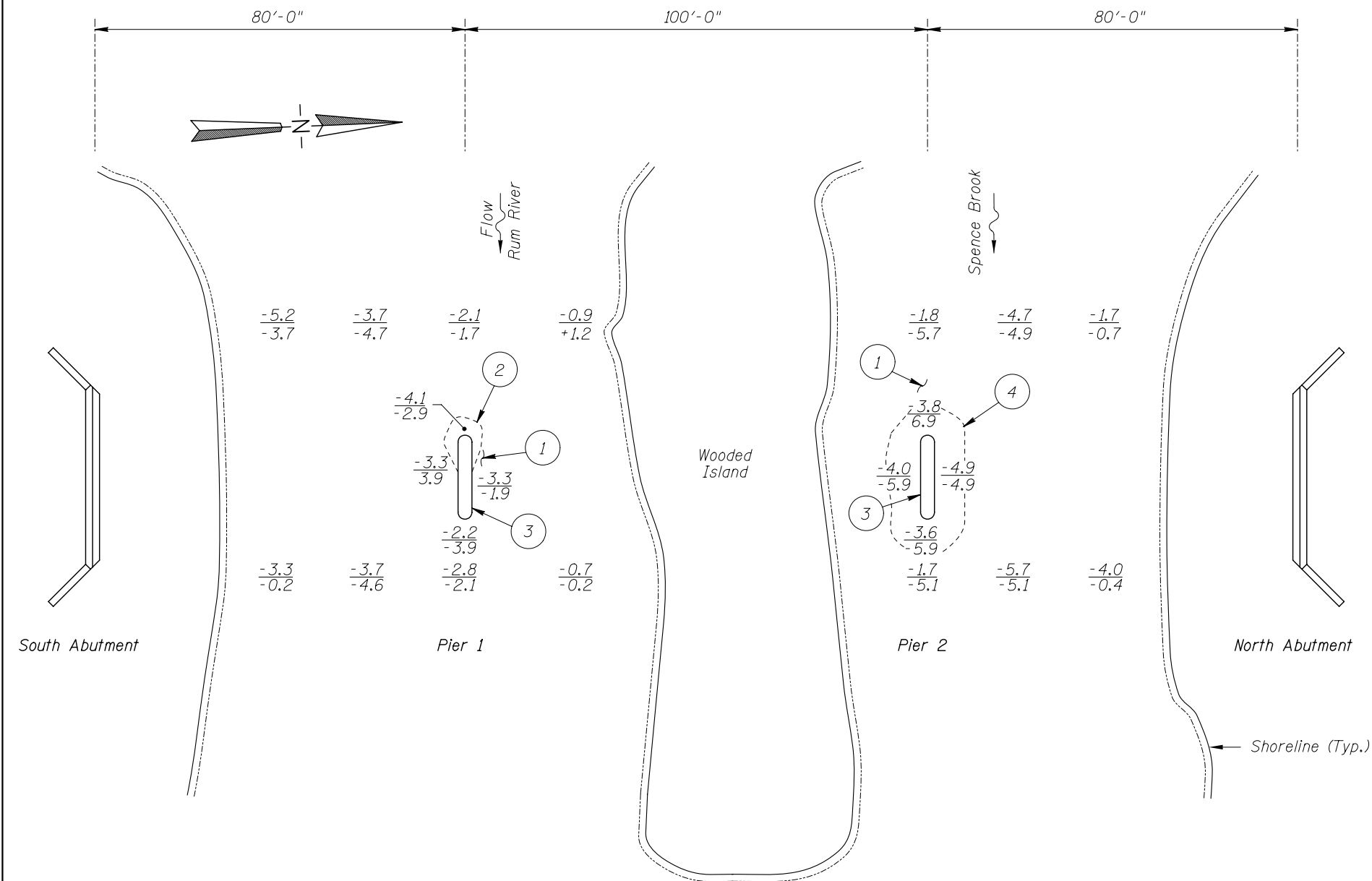
 Yes X No



Photograph 1. View of Pier 1, Looking North.



Photograph 2. View of Pier 2, Looking North.



SOUNDING PLAN

GENERAL NOTES:

- Piers 1 and 2 were inspected underwater.
- At the time of inspection on October 16, 2007, the waterline was located approximately 13.8 feet below the top of the cap at the upstream end of Pier 2. Since insufficient bridge elevation information was available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 86.2.
- Soundings indicate the water depth at the time of inspection and are measured in feet.
- Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES

- The channel bottom consisted of silty sand with up to 1 foot of probe rod penetration.
- A scour pocket, 3 feet in radius by 2 feet deep, was observed at the upstream nose of Pier 1 and extended along the pier shaft to the upstream quarter points.
- A band of light scaling was observed around the entire perimeter of both piers and extended from the channel bottom to 2 feet above the waterline with up to 1/4 inch of penetration.
- A scour pocket, 3 feet in radius by 2 feet deep, extended around the entire pier shaft at Pier 2.

Legend

-6.0 Sounding Depth (10/16/07)
-6.0 Sounding Depth (8/25/02)

Scour Depression

TYPICAL END VIEW OF PIERS

Note:

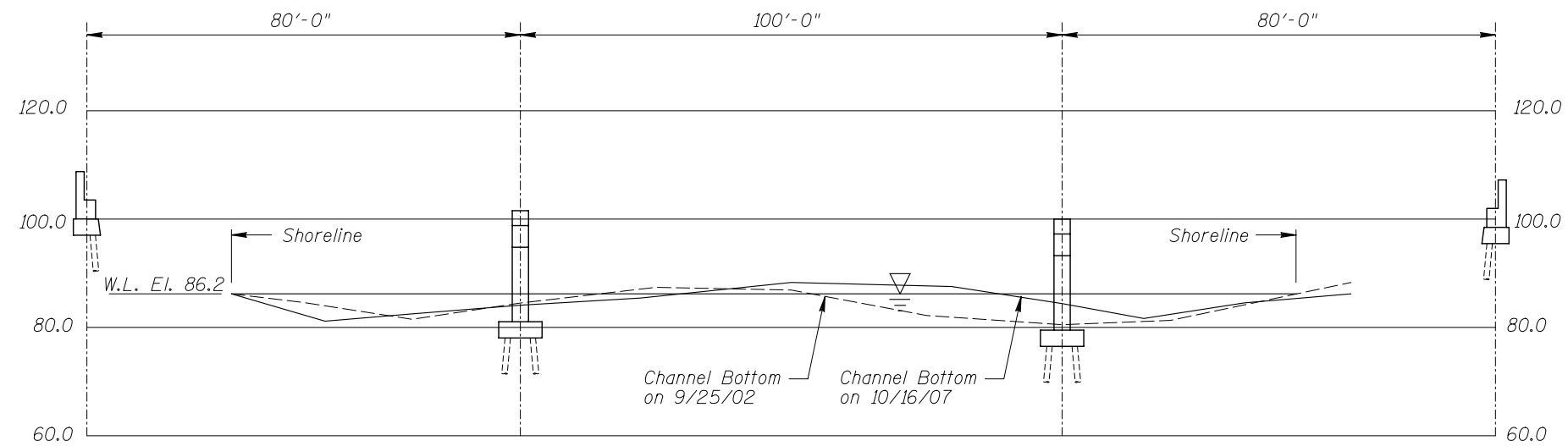
All soundings based on 2007 waterline location.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

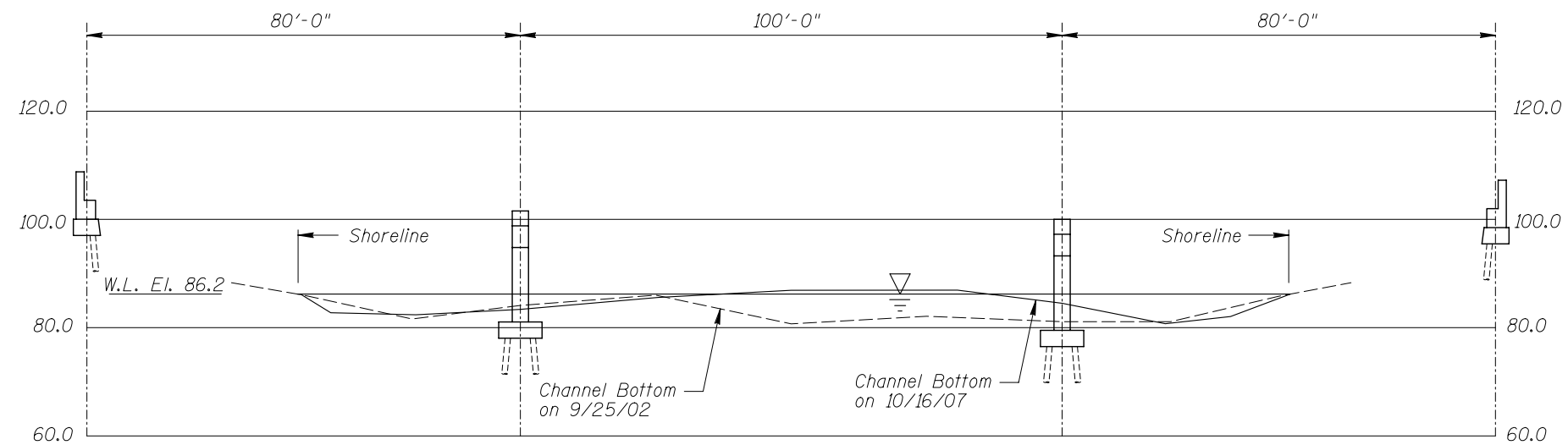
STRUCTURE NO. 30501
OVER THE RUM RIVER
DISTRICT 3, ISANTI COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: MDK	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT. 2007
Checked By: DGS		Scale: NTS
Code: 522130501		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION			
STRUCTURE NO. 30501 OVER THE RUM RIVER DISTRICT 3, ISANTI COUNTY			
UPSTREAM AND DOWNSTREAM FASCIA PROFILES			
Drawn By: MDK	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT. 2007	
Checked By: DGS		Scale: 1"=30'	
Code: 522130501		Figure No.: 2	

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 16, 2007

ON-SITE TEAM LEADER: Bradley A. Syler, P.E., S.E.

BRIDGE NO: 30501 WEATHER: Rain, 50° F

WATERWAY CROSSED: Rum River

DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Clayton G. Brookins, Valerie Roustan

EQUIPMENT: SCUBA, U/W Light, Scraper, Lead Line, Sounding Pole, Probe Rod, Camera

TIME IN WATER: 3:10 p.m.

TIME OUT OF WATER: 3:40 p.m.

WATERWAY DATA: VELOCITY 1.5 f.p.s.

VISIBILITY 1.0 foot

DEPTH 4.9 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the concrete of the piers was in good condition. A band of light scaling was observed along the entire perimeter of both piers from the channel bottom to 2 feet above the waterline with up to 1/4 inch of penetration. A 2-foot-deep scour depression was observed from the upstream quarter point on the north face of Pier 1 around the upstream nose to the upstream quarter point on the south face. The entire pier shaft at Pier 2 was located in a 2-foot-deep scour depression which extended approximately 3 feet off the pier faces and noses.

FURTHER ACTION NEEDED: YES X NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 30501
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Bradley A. Syler, P.E., S.E.
WATERWAY CROSSED Rum River

INSPECTION DATE October 16, 2007
NOTE: USE ALL APPLICABLE CONDITION
DEFINITIONS AS DEFINED IN THE MINNESOTA
RECORDING AND CODING GUIDE INCLUDING
GENERAL, SUBSTRUCTURE, CHANNEL AND
PROTECTION, AND CULVERTS AND WALL
DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	SUBSTRUCTURE						CHANNEL					GENERAL					
			PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER (BRACING)	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	4.1'	N	7	N	9	N	7	6	6	6	N	6	7	N	N	N	N	N
	Pier 2	4.9'	N	7	N	9	N	7	6	6	6	N	6	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete of the piers was in good condition. A band of light scaling was observed along the entire perimeter of both piers from the channel bottom to 2 feet above the waterline with up to ¼ inch of penetration. A 2-foot-deep scour depression was observed from the upstream quarter point on the north face of Pier 1 around the upstream nose to the upstream quarter point on the south face. The entire pier shaft at Pier 2 was located in a 2-foot-deep scour depression which extended approximately 3 feet off the pier faces and noses.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.